



RUSSIAN MARITIME REGISTER OF SHIPPING

CIRCULAR LETTER

No. 314-04-1558c

dated 30.04.2021

Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships

Item(s) of supervision:

ships under construction

Entry-into-force date:

01.06.2021

~~Valid till:~~

~~Validity period extended till:~~

~~Cancels / amends / adds Circular Letter No.~~

~~dated~~

Number of pages:

1 + 5

Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Part XIII "Materials"

Director General

Konstantin G. Palnikov

Text of CL:

We hereby inform that after their re-publication in 2021 the Rules for the Classification and Construction of Sea-Going Ships shall be amended as specified in the Appendices to the Circular Letter.

It is necessary to do the following:

1. Bring the content of the Circular Letter to the notice of the RS surveyors, interested organizations and persons in the area of the RS Branch Offices' activity.
 2. Apply the provisions of the Circular Letter during review and approval of technical documentation on ships contracted for construction or conversion on or after 01.06.2021, in the absence of a contract, on ships, the keels of which are laid or which are at a similar stage of construction on or after 01.06.2021, as well as during review and approval of the technical documentation on ships, the delivery of which is on or after 01.06.2021.
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List of the amended and/or introduced paras/chapters/sections:

Part XIII: Tables 3.16.1.1 and 3.16.1.6, para 3.16.1.7, Tables 3.16.1.9.1 and 3.16.2.2, paras 3.16.4.3 and 3.16.4.4

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"Thesis" System No. 21-87416

**Information on amendments to Part XIII introduced by the Circular Letter
(for inclusion in the Revision History to the RS Publication)**

Nos.	Amended paras/chapters/sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
1	Table 3.16.1.1	Requirements for the new corrosion-resistant alloy 04X20H6Г11M2AΦБ and non-destructive testing of pipes have been introduced	314-04-1558c of 30.04.2021	01.06.2021
2	Table 3.16.1.6	Requirements for the new corrosion-resistant alloy 04X20H6Г11M2AΦБ have been introduced	314-04-1558c of 30.04.2021	01.06.2021
3	Para 3.16.1.7	Requirements for supply of A-9 class steel semi-finished products have been introduced	314-04-1558c of 30.04.2021	01.06.2021
4	Table 3.16.1.9.1	New characteristics for testing of stainless steel semi-finished products and the requirements for characteristics of A-9 class steel semi-finished products have been introduced	314-04-1558c of 30.04.2021	01.06.2021
5	Table 3.16.2.2	Requirements for A-9 class steel rolled products have been introduced	314-04-1558c of 30.04.2021	01.06.2021
6	Para 3.16.4.3	Requirements for the scope of testing have been specified	314-04-1558c of 30.04.2021	01.06.2021
7	Para 3.16.4.4	Requirements for non-destructive testing have been specified	314-04-1558c of 30.04.2021	01.06.2021

**RULES FOR THE CLASSIFICATION AND CONSTRUCTION
OF SEA-GOING SHIPS, 2020,**

ND No. 2-020101-124-E

PART XIII. MATERIALS

3 STEEL AND CAST IRON

1 Table 3.16.1.1 is replaced by the following text:

"Table 3.16.1.1

Assumed classification of stainless steel depending on chemical composition and structure

Steel class	Steel designation	Steel mark		Temperature range for application, °C
		AISI/UNS	National	
M-1	X20Cr13	410	20X13	-20÷ +450
		420	30X13	
	X7CrNiNb16 4	–	07X16H4Б	-60÷ +350
MF-2	X15CrNi17	431	14X17H2	-20÷ +350
F-3	X8CrTi17	430Ti	08X17T	-0÷ +600
AM-4	X8CrNiTi17 6	–	08X17H6T	-60÷ +250
A-5	X10CrNiTi18 10	321, 347	08X18H10T	-165÷ +600
			12X18H10T	
	X2CrNi19 11	304L, 304LN	–	-165÷ +600
A-6	X2CrNiMo17 13 2	316L, 316LN	03X17H14M3	-165÷ +600
	X2CrNiMo18 13 3	317L, 317LN	–	-165÷ +600
	X2CrNiMoTi17 13 3	–	10X17H13M3T	-165÷ +600
A-7	X2CrNiMoCu20 18 6	S31254	–	-165÷ +600
	X2CrNiMoCu21 23 4 2	N08904	–	-165÷ +600
AF-8	X2CrNiMo22 5 3	S31803	03X22H6M2	-40÷ +250
	X3CrNiMo25 6 3	S31260	–	-40÷ +250
	X4CrNiVo25 5 3	S32550	–	-40÷ +250
	X2CrNiMo25 7 4	S32750	–	-40÷ +250
	X3CrNiMo25 7 3	S32760	–	-40÷ +250
	X10CrNiTi22 6	–	08X22H6T	-40÷ +250
	X10CrNiMo21 6 2	–	08X21H6M2T	-40÷ +250
A-9	X4CrNiMnMoNVNb 20 6 11 2	–	04X20H6Г11M2АФБ	-80÷ +500

2 Table 3.16.1.6 is replaced by the following text:

"Table 3.16.1.6

Chemical composition of stainless steel

Steel class and mark	AISI/UNS									
	Content of elements, %									
	C, max	Si	Mn	P	S	Cr	Ni	Mo	N	Other
Martensitic										
410	0,12	1,0	1,0	0,045	0,03	12,0 — 14,0	–	–	–	–
420	0,17	1,0	1,0	0,045	0,03	12,0 — 14,0	–	–	–	–
Martensite-ferritic										
431	0,23	1,0	1,0	0,045	0,03	16,0 — 18,0	1,5 — 2,5	–	–	–
Ferritic										
43Ti	0,1	1,0	1,0	0,045	0,03	16,0 — 18,0	–	–	–	Ti×C

AISI/UNS										
Steel class and mark	Content of elements, %									
	C, max	Si	Mn	P	S	Cr	Ni	Mo	N	Other
Austenitic										
304L	0,03	1,0	2,0	0,045	0,03	17,0 — 20,0	8,0 — 13,0	—	0,10	—
304LN	0,03	1,0	2,0	0,045	0,03	17,0 — 20,0	8,0 — 12,0	—	0,10 — 0,22	—
316L	0,03	1,0	2,0	0,045	0,03	16,0 — 18,5	10,0 — 15,0	2,0 — 3,0	0,10	—
316LN	0,03	1,0	2,0	0,045	0,03	16,0 — 18,5	10,0 — 14,5	2,0 — 3,0	0,10 — 0,22	—
317L	0,03	1,0	2,0	0,045	0,03	18,0 — 20,0	11,0 — 15,0	3,0 — 4,0	0,10	—
317LN	0,03	1,0	2,0	0,045	0,03	18,0 — 20,0	12,5 — 15,0	3,0 — 4,0	0,10 — 0,22	—
321	0,08	1,0	2,0	0,045	0,03	17,0 — 19,0	9,0 — 12,0	—	0,10	Ti \geq 5×C \leq 0,70
347	0,08	1,0	2,0	0,045	0,03	17,0 — 19,0	9,0 — 13,0	—	0,10	Nb \geq 10×C \leq 1,0
UNS S31254	0,02	0,8	1,0	0,03	0,01	19,5 — 20,5	17,5 — 18,5	6,0 — 6,5	0,18 — 0,22	Cu 0,50 — 1,0
UNS N08904	0,02	1,0	2,0	0,04	0,025	19,0 — 23,0	23,0 — 28,0	4,0 — 5,0	0,15	Cu 1,00 — 2,0
Austenite-ferritic (Duplex)										
UNS S31260	0,03	0,75	1,0	0,03	0,03	24,0 — 26,0	5,5 — 7,5	2,5 — 3,5	0,10 — 0,30	Cu 0,2 — 0,8 W 0,1 — 0,5
UNS S3 1803	0,03	1,0	2,0	0,03	0,02	21,0 — 23,0	4,5 — 6,5	2,5 — 3,5	0,08 — 0,20	—
UNS S32550	0,04	1,0	1,5	0,04	0,03	24,0 — 27,0	4,5 — 6,5	2,0 — 4,0 ¹	0,10 — 0,25	Cu 1,5 — 2,5
UNS S32750	0,03	0,8	1,2	0,035	0,02	24,0 — 26,0	6,0 — 8,0	3,0 — 5,0	0,24 — 0,32	Cu 0,50, max
UNS S32760	0,03 ₂	1,0	1,0	0,03	0,01	24,0 — 26,0	6,0 — 8,0	3,0 — 4,0	0,20 — 0,30	Cu 0,50 — 1,0 W 0,50 — 1,0
¹ For pipes content of Mo is taken equal to 2,90 to 3,90										
² For pipes content of C is \leq 0,05.										

National stainless steels										
Steel class and mark	Content of elements, %									
	C	Si, max	Mn, max	Cr	Ni	Ti	Mo	S, max	P, max	
Martensitic										
20X13	0,16 — 0,25	0,8	0,8	12,0 — 14,0	—	—	—	0,025	0,030	
30X13	0,26 — 0,35	0,8	0,8	12,0 — 14,0	—	—	—	0,025	0,030	
07X16П4Б	0,05 — 0,10	0,6	0,2 — 0,5	14,0 — 16,5	3,5 — 4,5	Nb 0,2 — 0,4	—	0,020	0,025	
Martensite-ferritic										
14X17H2	0,11 — 0,17	0,8	0,8	16,0 — 18,0	1,5 — 2,5	—	—	0,025	0,030	
Ferritic										
08X17T	max 0,08	0,8	0,8	16,0 — 18,0	—	5×C — 0,8	—	0,025	0,030	
Austenite-martensitic										
08X17H6T	max 0,08	0,8	0,8	16,5 — 18,0	5,5 — 6,5	0,15 — 0,35	—	0,020	0,035	
Austenitic										
08X18H10T	max 0,08	0,8	2,0	17,0 — 19,0	9,0 — 11,0	5C — 0,7	—	0,020	0,035	
12X18H10T	max 0,12	0,8	2,0	17,0 — 19,0	9,0 — 11,0	5C — 0,8	—	0,020	0,035	
10X17H13M3T	max 0,10	0,8	2,0	16,0 — 18,0	12,0 — 14,0	5C — 0,7	3,0 — 4,0	0,020	0,035	
03X17H14M3	max 0,03	max 0,4	1,0 — 2,0	16,8 — 18,3	13,5 — 15,0	—	2,2 — 2,8	0,020	0,030	
04X20H6Г11M2AФБ ¹	max 0,04	0,1 — 0,4	10,0 — 12,0	18,5 — 19,5	6,0 — 8,0	—	1,2 — 1,7	0,010	0,020	
Austenite-ferritic										
08X22H6T	max 0,08	0,8	0,8	21,0 — 23,0	5,3 — 6,3	5C — 0,65	—	0,025	0,035	
08X21H6M2T	max 0,08	0,8	0,8	20,0 — 22,0	5,5 — 6,5	0,20 — 0,40	1,8 — 2,5	0,025	0,035	
03X22H6M2	max 0,03	max 0,4	1,0 — 2,0	21,0 — 23,0	5,5 — 6,5	—	1,8 — 2,5	0,020	0,035	
¹ Additional requirement for the content of the following chemical elements: N: 0,45 — 0,53; Nb: 0,10 — 0,20; V: 0,10 — 0,20.										

2 **Para 3.16.1.7** is replaced by the following text:

"3.16.1.7 Condition of supply.

All semi-finished products shall be supplied in heat-treated condition.

Heat treatment conditions are specified in accordance with standards recognized by the Register or other normative documents.

Where heat treatment conditions are not indicated in the standards, such conditions shall be specified in accordance with the standards and other normative technical documentation approved by the Register.

Steel plates and flats of 4 mm in thickness and less may be supplied in semi-cold-worked or coldworked condition.

Type or conditions of heat treatment shall be indicated in the Manufacturer's Certificate for the Semi-Finished Product.

The semi-finished products made of A-9 class steel shall be supplied after thermo-mechanical rolling. Upon agreement with the Register the semi-finished products may be supplied after being quenched with cooling in water in accordance with normative technical documentation."

3 **Table 3.16.1.9.1** is replaced by the following text:

"Table 3.16.1.9.1

Types of semi-finished products of stainless steel tests

Characteristics to be determined	Steel class								
	M-1	MF-2	F-3	AM-4	A-5	A-6	A-7	AF-8	A-9
Mechanical properties at 20 °C:									
tensile strength R_m	+	+	+	+	+	+	+	+	+
yield stress $R_{p0,2}$	+	+	+	+	+	+	+	+	+
elongation A_5	+	+	+	+	+	+	+	+	+
reduction in area Z	+	+	+	+	+	+	+	+	+
Same at operating temperature	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹
Impact toughness at +20 °C, KCV^{+20}	+	+	+	+	-	-	-	+	+
Impact toughness at a temperature below KCV	+ ¹	+ ¹	-	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+
Impact energy at a temperature below KV	-	-	-	-	+ ¹	+ ¹	+ ¹	+	+ ¹
Susceptibility to intergranular corrosion	+ ²	+	+	+	+	+	+	+	+
Macrostructure examination	+	+	+	+	+	+	+	+	+
a-phase examination	-	-	-	-	+ ¹	+ ¹	+ ¹	-	+ ¹
Grain size control	-	-	+	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹
Process tests	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹
Testing of the geometric dimensions	+	+	+	+	+	+	+	+	+
Non-destructive testing	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+
Control of non-metallic inclusion content	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹	+ ¹
Determination or confirmation of brittleness critical temperature	+ ¹	+ ¹	+ ¹	+ ¹	-	-	-	-	-
Determination of a crack resistance parameter CTOD	-	-	-	-	-	-	-	-	+ ¹
Through thickness tensile tests	-	-	-	-	-	-	-	-	+ ¹
¹ When specified in the approved normative documentation excluding the pipes.									
² Only for steel mark 07X16H45.									

4 **Table 3.16.2.2** is replaced by the following text:

"Table 3.16.2.2

Mechanical properties of stainless steel rolled products

Steel class	Tensile strength R_m , min, MPa	Yield stress $R_{p0,2}$, min, MPa	Elongation A_5 , min, %
M-1	650	440	16
	850	735	13
MF-2	690	540	12
F-3	440	-	18
A-5	440	175	45
	490	195	35
A-6	440	185	40
	510	200	35
A-7	650	300	35
	580	340	20
AF-8	650	450	25
	760	550	15
A-9	800	500	20
	900	650	20
	940	760	20

5 **Paras 3.16.4.3 and 3.16.4.4** are replaced by the following text:

"3.16.4.3 Scope of testing.

The size of the batch shall be determined as follows:

where the outside diameter is 76 mm and less — 300 pieces;

where the outside diameter is over 76 mm — 200 pieces.

Samples are taken from one end of at least two pipes of the batch.

Unless expressly specified otherwise in the normative documentation, the following specimens shall be taken from each sample:

for tensile test — 1 specimen;

for flattening or expansion of rings — 1 specimen;

for flaring — 1 specimen;

for intergranular corrosion test of pipes made of austenitic steel — set of at least 2 specimens;

for pipes of austenitic + ferritic pipes — two sets of at least 4 specimens, one of which is a check set;

3.16.4.4 Inspection and non-destructive testing.

Each pipe shall be subjected to a hydraulic pressure test, if this test is specified in the normative documentation for products.

Each pipe shall be subjected to ultrasonic testing. The selection of alternative methods for non-destructive testing is subject to agreement with the Register.

All pipes and tubes shall undergo external and internal examination of the surface for compliance with the requirements of normative documentation for products. Absence of inadmissible defects shall be guaranteed by the manufacturer."